

**In the Claims:**

This listing of claims will replace all prior versions and listings of claims.

**Listing of Claims:**

Claim 1. (Currently Amended) A method of improving embryo implantation, the method comprising contacting an embryo with an effective amount of a purified recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) ~~an~~ a mature form of a) or b), and placing the embryo in a receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 2. (Previously Presented) The method of Claim 1, wherein said recombinant heparanase is a mature heparanase.

Claim 3. (Previously Presented) The method of Claim 1, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 4. (Previously Presented) The method of Claim 1, wherein contacting the embryo with an effective amount of said recombinant heparanase is in vitro.

Claim 5. (Previously Presented) The method of Claim 1, wherein contacting the embryo with an effective amount of said recombinant heparanase is in utero.

Claim 6. (Canceled)

Claim 7. (Currently Amended) A method of improving embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified

recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) ~~a~~ a mature form of a) or b), and placing the embryo in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 8. (Previously Presented) The method of Claim 7, wherein said recombinant heparanase is a mature heparanase.

Claim 9. (Previously Presented) The method of Claim 7, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 10. (Canceled)

Claim 11. (Previously Presented) The method of Claim 7, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo in the receptive uterus.

Claim 12. (Previously Presented) The method of Claim 7, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo in the receptive uterus.

Claim 13. (Currently Amended) A method of improving embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) ~~a~~ a mature form of a) or b), contacting an embryo with an effective amount of said recombinant heparanase and placing the embryo in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 14. (Previously Presented) The method of Claim 13, wherein said recombinant heparanase is a mature heparanase.

Claim 15. (Previously Presented) The method of Claim 13, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 16. (Previously Presented) The method of Claim 13, wherein contacting the embryo with an effective amount of said recombinant heparanase is in vitro.

Claim 17. (Previously Presented) The method of Claim 13, wherein contacting the embryo with an effective amount of said recombinant heparanase is in utero.

Claim 18. (Canceled)

Claim 19. (Previously Presented) The method of Claim 13, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo in the receptive uterus.

Claim 20. (Previously Presented) The method of Claim 13, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo in the receptive uterus.

Claim 21. (Currently Amended) A method of improving in vitro fertilization (IVF) embryo implantation, the method comprising contacting an embryo generated via IVF with an effective amount of a purified recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) ~~a~~ ~~an~~ mature form of a) or b), and placing the embryo in a receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 22. (Previously Presented) The method of Claim 21, wherein said recombinant heparanase is a mature heparanase.

Claim 23. (Previously Presented) The method of Claim 21, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 24. (Previously Presented) The method of Claim 21, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in vitro.

Claim 25. (Previously Presented) The method of Claim 21, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in utero.

Claim 26. (Currently Amended) A method of improving IVF embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) a mature form of a) or b), and placing the embryo generated via IVF in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 27. (Previously Presented) The method of Claim 26, wherein said recombinant heparanase is a mature heparanase.

Claim 28. (Previously Presented) The method of Claim 26, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 29. (Previously Presented) The method of Claim 26, wherein contacting the

receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo generated via IVF in the receptive uterus.

Claim 30. (Previously Presented) The method of Claim 26, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo generated via IVF in the receptive uterus.

Claim 31. (Currently Amended) A method of improving IVF embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase comprising a) SEQ ID NO:1; b) SEQ ID NO:1 having a phenylalanine residue instead of a tyrosine residue at position 246; or c) a mature form of a) or b), contacting an embryo generated via IVF with an effective amount of said recombinant heparanase and placing the embryo generated via IVF in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 32. (Previously Presented) The method of Claim 31, wherein said recombinant heparanase is a mature heparanase.

Claim 33. (Previously Presented) The method of Claim 31, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 34. (Previously Presented) The method of Claim 31, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in vitro.

Claim 35. (Previously Presented) The method of Claim 31, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in utero.

Claim 36. (Previously Presented) The method of Claim 31, wherein contacting the

receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo generated via IVF in the receptive uterus.

Claim 37. (Previously Presented) The method of Claim 31, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo generated via IVF in the receptive uterus.

Claims 38 -50 (Canceled)

Claim 51. (New) A method of improving embryo implantation, the method comprising contacting an embryo with an effective amount of a purified recombinant heparanase having at least 90% homology to SEQ ID NO:1, and placing the embryo in a receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 52. (New) The method of Claim 51, wherein said recombinant heparanase is a mature heparanase.

Claim 53. (New) The method of Claim 51, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 54. (New) The method of Claim 51, wherein contacting the embryo with an effective amount of said recombinant heparanase is in vitro.

Claim 55. (New) The method of Claim 51, wherein contacting the embryo with an effective amount of said recombinant heparanase is in utero.

Claim 56. (New) A method of improving embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase having at least 90% homology with SEQ ID NO:1, and placing

the embryo in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 57. (New) The method of Claim 56, wherein said recombinant heparanase is a mature heparanase.

Claim 58. (New) The method of Claim 56, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 59. (New) The method of Claim 56, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo in the receptive uterus.

Claim 60. (New) The method of Claim 56, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo in the receptive uterus.

Claim 61. (New) A method of improving embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase having at least 90% homology with SEQ ID NO:1, contacting an embryo with an effective amount of said recombinant heparanase and placing the embryo in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 62. (New) The method of Claim 61, wherein said recombinant heparanase is a mature heparanase.

Claim 63. (New) The method of Claim 61, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 64. (New) The method of Claim 61, wherein contacting the embryo with an effective amount of said recombinant heparanase is in vitro.

Claim 65. (New) The method of Claim 61, wherein contacting the embryo with an effective amount of said recombinant heparanase is in utero.

Claim 66. (New) The method of Claim 61, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo in the receptive uterus.

Claim 67. (New) The method of Claim 61, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo in the receptive uterus.

Claim 68. (New) A method of improving in vitro fertilization (IVF) embryo implantation, the method comprising contacting an embryo generated via IVF with an effective amount of a purified recombinant heparanase having at least 90% homology with SEQ ID NO:1, and placing the embryo in a receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 69. (New) The method of Claim 68, wherein said recombinant heparanase is a mature heparanase.

Claim 70. (New) The method of Claim 68, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.



Claim 71. (New) The method of Claim 68, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in vitro.

Claim 72. (New) The method of Claim 68, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in utero.

Claim 73. (New) A method of improving IVF embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase having at least 90% homology with SEQ ID NO:1, and placing the embryo generated via IVF in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 74. (New) The method of Claim 73, wherein said recombinant heparanase is a mature heparanase.

Claim 75. (New) The method of Claim 73, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 76. (New) The method of Claim 73, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo generated via IVF in the receptive uterus.

Claim 77. (New) The method of Claim 73, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo generated via IVF in the receptive uterus.

Claim 78. (New) A method of improving IVF embryo implantation, the method comprising contacting a receptive uterus with an effective amount of a purified recombinant heparanase having at least 90% homology with SEQ ID NO:1, contacting an

embryo generated via IVF with an effective amount of said recombinant heparanase and placing the embryo generated via IVF in the receptive uterus, whereby said embryo and said uterus are of the same species, wherein said purified recombinant heparanase can elicit anti-heparanase antibodies.

Claim 79. (New) The method of Claim 78, wherein said recombinant heparanase is a mature heparanase.

Claim 80. (New) The method of Claim 78, wherein said recombinant heparanase is a pro-heparanase, cleavable into mature heparanase.

Claim 81. (New) The method of Claim 78, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in vitro.

Claim 82. (New) The method of Claim 78, wherein contacting the embryo generated via IVF with an effective amount of said recombinant heparanase is in utero.

Claim 83. (New) The method of Claim 78, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase precedes placing the embryo generated via IVF in the receptive uterus.

Claim 84. (New) The method of Claim 78, wherein contacting the receptive uterus with the effective amount of said recombinant heparanase is concurrent to placing the embryo generated via IVF in the receptive uterus.